# GEOLOGICAL SURVEY OF PAKISTAN

SERVING THE NATION THROUGH GEOSCIENCE

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GSP NEWSLETTER - SPECIAL EDITION 2026


## REVITALIZATION & INAUGURATION OF GEOSCIENCE ADVANCE RESEARCH LABORATORIES (GARL)




A NEW ERA FOR GEOSCIENCE IN PAKISTAN

Prime Minister Muhammad Shehbaz Sharif inaugurated the state-of-the-art Geoscience Advance Research Laboratories (GARL), marking a major step toward strengthening geoscientific research, innovation, and national capacity.

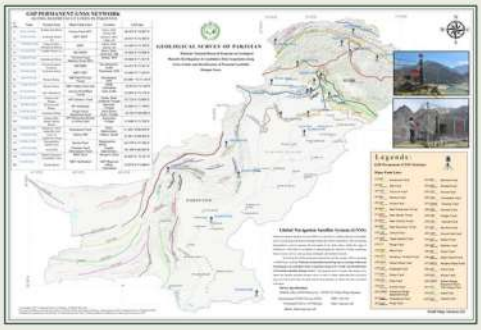
## Pakistan-UK Launch Landmark $400,000 Geoscience Capacity Building Programme

**To Strengthen GSP Geoscientific capacity**



Funded by UK Government | Implemented by: igs

## 2025-26 HIGHLIGHTS



**08** ANNUAL FIELD PROGRAMS

**4324** GEOCHEMICAL SAMPLE ANALYSES

**03** PSDP/ADP PROJECTS

**07** NATIONAL & INTERNATIONAL COLLABORATIONS

## OUR FOCUS AREAS

**MINERAL EXPLORATION**
Unlocking Pakistan's Mineral Potential

**LABORATORY ANALYSIS**
State-of-the-Art Analytical Facilities

**REMOTE SENSING & GIS**
Advanced Geospatial Solutions for Sustainable Development

**GEOHAZARD & SEISMIC STUDIES**
Assessing Risks for a Safer Tomorrow


GEOSCIENCE ADVANCE RESEARCH LABORATORIES (GARL), P.O BOX NO. 1461, SHAHZAD TOWN, ISLAMABAD

www.gsp.gov.pk

# Message From The Federal Minister

"I am pleased to convey my message for this Special Edition of the Geological Survey of Pakistan (GSP) Newsletter. GSP plays an important role in strengthening Pakistan's geoscientific knowledge base and supporting the responsible development of our mineral and natural-resource potential.

The revitalization of the Geoscience Advance Research Laboratories (GARL), alongside advances in geological mapping, modern analytical facilities, digital geoscience and international cooperation, marks an important step towards enhancing Pakistan's scientific and technical capacity. I appreciate the efforts of GSP in advancing its mandate and encourage the institution to continue building excellence in geoscientific research, innovation and services in support of national development."



**Ali Pervaiz Malik**

Federal Minister for Petroleum
Ministry of Energy
(Petroleum Division)

# Message From The Federal Secretary

"I am pleased to note the continued progress of the Geological Survey of Pakistan (GSP) in strengthening its scientific and technical capabilities. The modernization of GARL, expansion of geological mapping, development of digital geodata and growing international engagement reflect GSP's commitment to meeting the country's evolving geoscientific needs. As Pakistan moves towards greater utilization of its mineral and natural resources, reliable geological information, modern analytical capacity and strong scientific institutions are essential. I commend the GSP team for its continued efforts and look forward to further strengthening its contribution to research, resource assessment and sustainable national development."



**Hamed Yaqoob Sheikh**

Secretary,
Ministry of Energy
(Petroleum Division)

# Message From The Director General

"It gives me immense pleasure to present the Special Edition Newsletter of the Geological Survey of Pakistan (GSP), highlighting our institutional achievements, scientific contributions, and ongoing efforts towards the sustainable development of Pakistan's mineral resources.

As the national geoscientific organization, GSP plays a vital role in geological mapping, mineral exploration, geoscientific data generation, and providing scientific support for informed decision-making in the mineral sector. At a time when Pakistan is focusing on unlocking its vast mineral potential, our responsibility to generate reliable geological information, strengthen exploration capabilities, and facilitate investment through credible scientific data has become increasingly important.

Our vision is to transform GSP into a modern, technologically advanced, and knowledge-driven organization through the digitization and dissemination of geoscientific data, the promotion of critical mineral exploration, the strengthening of analytical facilities, and investment in human resource development. We also recognize the importance of enhanced coordination with Federal and Provincial Governments, academia, research institutions, and international partners in advancing Pakistan's geoscientific knowledge and mineral development objectives.

I hope this Newsletter will serve as a valuable platform for sharing our achievements, ongoing initiatives, and future aspirations."



**ADNAN ALAM AWAN**

Director General
Geological Survey of Pakistan

# KEY HIGHLIGHTS

## A NEW ERA FOR GEOSCIENCE: REVITALIZATION AND INAUGURATION OF GEOSCIENCE ADVANCE RESEARCH LABORATORIES (GARL)

GSP marked a significant milestone with the revitalization and inauguration of GARL, reinforcing its commitment to modern geoscientific research and analytical excellence. The upgraded facility is equipped with advanced technologies to support mineral exploration, resource assessment, and scientific innovation, further strengthening Pakistan's geoscience infrastructure.




Prime Minister, Muhammad Shehbaz Sharif inaugurated the upgraded facility on 17 October 2025, joined by Field Marshal Syed Asim Munir, NI (M), HJ, COAS-CDF, Federal Ministers, senior officials, ambassadors, and business leaders. The guests visited the laboratories and commended the advanced instrumentation and the revitalized research environment.



Established in 1991 with the support of the Government of Japan through JICA, GARL has been modernized under a PSDP project with state-of-the-art analytical systems, including XRD, Wavelength Dispersive XRF, ICP-MS, MP-AES, and Fluid Inclusion Analysis facilities. The laboratory has also achieved ISO/IEC 17025 accreditation, enabling the generation of internationally recognized analytical data for mineral exploration, resource evaluation, and geoscientific research.

# KEY HIGHLIGHTS

## JICA PRESIDENT VISITS GARL: REAFFIRMING FOUR DECADES OF PAKISTAN-JAPAN COOPERATION IN GEOSCIENCES

### JICA Commends GSP and Reaffirms Long-Term Partnership

On 5 August 2026, GSP had the distinct honor of welcoming Dr. Akihiko Tanaka, President of the Japan International Cooperation Agency (JICA), to the Geoscience Advance Research Laboratories (GARL), Islamabad.



Dr. Tanaka was accompanied by a distinguished JICA delegation, including H.E. Shuichi Akamatsu, Ambassador of Japan to Pakistan. The delegation was warmly received by Syed Zakaria Hussain Shah, Additional Secretary (Administration), Ministry of Energy (Petroleum Division), Adnan Alam Awan, Director General, Geological Survey of Pakistan, and senior officials of GSP.



During the visit, the delegation was briefed on GARL's state-of-the-art facilities, its ongoing research initiatives, and its contributions to geological investigations, mineral resource assessment, and scientific capacity building in Pakistan.

GSP expresses its heartfelt gratitude to JICA, the Embassy of Japan in Pakistan, and the Government of Japan for their enduring friendship, unwavering support, and invaluable contributions to the advancement of geosciences in Pakistan.

Following the visit, in a formal letter of appreciation, JICA Chief Representative Yusuke Shinozaki commended the GSP team while expressing his desire to further strengthen collaboration to achieve sustainable and impactful outcomes for the benefit of project stakeholders and beneficiaries.



# KEY HIGHLIGHTS

## A LEGACY OF SCIENTIFIC EXCELLENCE: GARL CELEBRATES 35 YEARS OF PAKISTAN-JAPAN GEOSCIENCE COLLABORATION

### A History of Collaborative Innovation

Established in 1991 through a Japanese grant aid project, GARL has served as the backbone of Pakistan's advanced geological testing and mineral exploration capabilities. The anniversary highlighted how this 35-year partnership has consistently elevated Pakistan's analytical standards to an international level.






### One-day Seminar on Strategic Role of Geoscientific Laboratory to Support Mineral Resources Development

JICA in collaboration with GSP hosted this seminar to celebrate the 35th Anniversary of the GARL in Islamabad on 11 June 2026.

Dr. Ogasawara (Long-serving JICA Expert): Shared a retrospective journey of the institutional trust and technical milestones built between Japanese and Pakistani scientists since 1991.

Dr. Fukuyama Mayuko (Akita University, Japan): Delivered a specialized lecture on global mineral resource trends and the latest advancements in geochemical analysis methodologies.






The event concluded with a renewed commitment from GSP and JICA to further enhance GARL's analytical capabilities through modernization and technological advancement.

# KEY HIGHLIGHTS

## PAKISTAN-UK LAUNCH LANDMARK $400,000 GEOSCIENCE CAPACITY-BUILDING INITIATIVE TO STRENGTHEN GSP GEOSCIENTIFIC CAPACITY

The Geological Survey of Pakistan (GSP) has officially entered a new era of digital exploration. In a landmark event at the Geoscience Advance Research Laboratories (GARL) in Islamabad, Federal Minister for Petroleum, Ali Pervaiz Malik, and British High Commissioner, Jane Marriott, jointly inaugurated a transformative $400,000 capacity-building initiative.





*"Pakistan has extraordinary geological potential, but realising it depends on trustworthy data collated through modern methods. Through this partnership, the UK is supporting Pakistan to build the skills, systems and credibility needed to attract responsible investment and unlock long term economic potential across the country."* -Jane Marriott, CMG OBE, British High Commissioner to Pakistan.



The IGS Training Programme on GIS, Remote Sensing and Digital Geological Surveying, commenced on 09 July 2026 and concluded on 14 August 2026 for GSP Geoscientists.

It was a great pleasure for the Geological Survey of Pakistan (GSP) to be part of this important capacity-building initiative, supported by the British High Commission under the FCDO-supported REMIT Programme. The knowledge and skills imparted by International Geoscience Services and its expert resource persons in digital geological surveying, GIS, spectral remote sensing and airborne geophysics will significantly enhance the capabilities of our geoscientists.



A two-week Airborne Geophysics Workshop was conducted at GARL, Islamabad (01-12 June 2026) under the GSP-IGS Capacity Building Programme. Officers of the GSP Geophysics Branch actively participated in the training, which enhanced their knowledge and skills in modern airborne geophysical techniques and applications.

# KEY HIGHLIGHTS

## BUILDING GSP's GEODATA WEB PORTAL: GSP HOLDS PORTAL DESIGN WORKSHOP WITH SOUTH AFRICAN EXPERTS FROM SPATIAL DIMENSIONS

### Pakistan's Digital Geoscience Gateway

GSP, in collaboration with Spatial Dimensions, successfully conducted a four-day Geodata Portal Design Workshop to finalize the functional and technical design of the upcoming GSP Geodata Portal. The workshop was attended by GSP's management, geoscientists, GIS and IT professionals, along with the technical team from Spatial Dimensions.



The workshop covered GSP's strategic objectives, existing digital infrastructure, GIS software environment, and geoscientific data holdings, including geological maps, geochemical datasets, reports, and raster data.



Technical sessions identified user requirements and defined key portal features. The workshop concluded with the development of the initial functional and technical design of the Geodata Portal, tailored to GSP's operational requirements, along with a time-bound implementation roadmap.

The portal is scheduled to be launched during the Pakistan Minerals Investment Forum (PMIF) in November 2026 and will significantly enhance the accessibility, management, and dissemination of Pakistan's geoscientific information to support mineral exploration and investment.

# KEY HIGHLIGHTS

## MAPPING PAKISTAN'S FUTURE: ACCELERATED GEOLOGICAL MAPPING AND DIGITAL TRANSFORMATION

The Geological Survey of Pakistan (GSP) is implementing the PSDP project, "Accelerated Geological Mapping of Unmapped Outcrop Areas of Pakistan at 1:50,000 Scale (350 Toposheets), (2023-2026)." This flagship initiative is a major milestone in strengthening Pakistan's geoscientific database and mineral exploration capabilities.

A key achievement has been GSP's transition from conventional raster geological maps to standardized vector maps of 350 toposheets marking a major milestone in the project's implementation. Legacy maps are being digitized, while all new geological maps are produced in a uniform vector format and integrated into a centralized national geodatabase.






This digital transformation will provide a single, integrated platform for accessing Pakistan's geology and mineral occurrence data, supporting efficient mineral exploration, evidence-based planning, and informed investment decisions. To accelerate the vectorization and mosaicking of geological maps, GSP constituted dedicated working groups to finalize GIS-based datasets for the National Web Portal.

The project has successfully completed geological mapping of all 350 targeted toposheets at a scale of 1:50,000, creating a comprehensive foundation for future mineral exploration, resource assessment, and national geoscientific planning



# KEY HIGHLIGHTS

## POTENTIAL EVALUATION OF PLACER GOLD IN RIVER INDUS IN DISTRICT ATTOCK

GSP has completed a comprehensive geological, geophysical, geochemical, and remote sensing investigation of fluvial sediments along the Indus River. Spanning a 32-kilometer stretch from Ghazi (Tarbela Dam) to the Attock Bridge, the study covers an area of approximately 63 square kilometers with a variable width from 1 to 3 kilometers.

Following drone surveys and geophysical investigations, detailed surface sampling and analysis were undertaken. To substantiate surface data, 30 boreholes were drilled to a depth of 100 feet at promising locations.

Based on the integrated results of these investigations, nine mineral blocks ranging in size from 1.41 to 3.54 square kilometers were proposed. Although additional drilling is required to accurately calculate reserves, average concentrations from the drill samples to an estimated inferred gold resource of 32.83 tonnes.





### GEOCHEMICAL ANALYSIS RESULTS

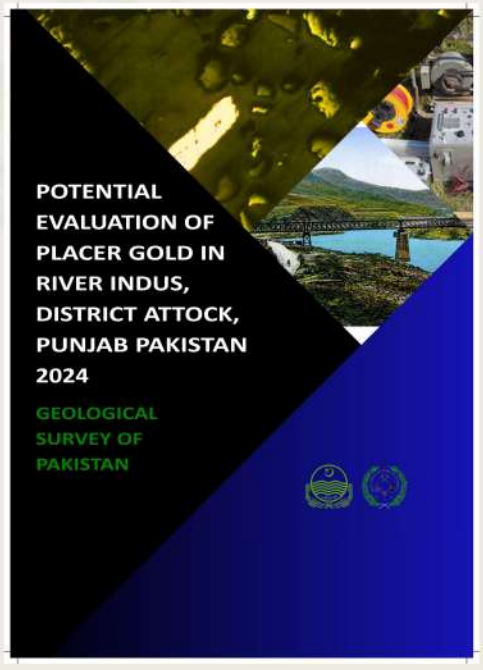
Gold Distribution: Surface samples exhibited gold concentrations ranging from 0.5 to 36 ppm, while vertical variations within the boreholes ranged from below detection limits (BDL) up to 164 ppm.

Associated Elements:
Zinc, Silver, Nickel, Manganese, Lead, Copper, and Cobalt.





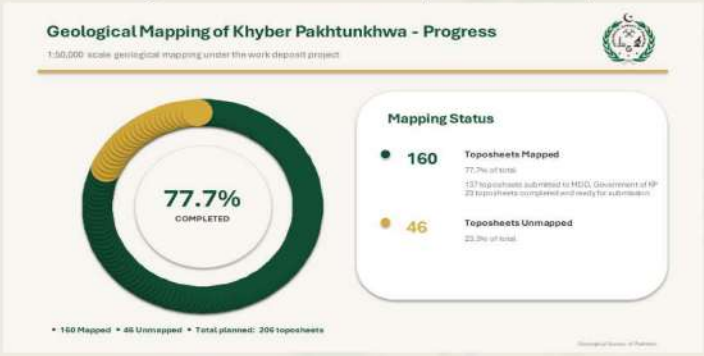


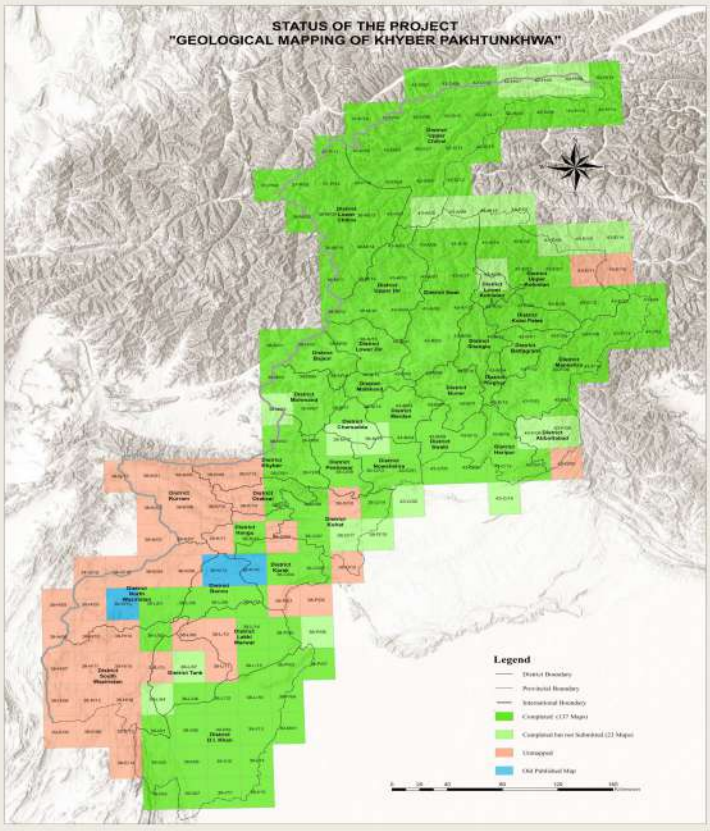


# KEY HIGHLIGHTS

## GEOLOGICAL MAPPING PROJECT OF GSP AND KHYBER PAKHTUNKHWA

The Geological Survey of Pakistan (GSP), Peshawar Office, is currently implementing the Work Deposit Project titled "Geological Mapping of Khyber Pakhtunkhwa", initiated in 2022 for the Mines and Minerals Department, Government of Khyber Pakhtunkhwa. To date, 160 out of the planned 206 geological map sheets at 1:50,000 scale have been completed, out of which 137 maps have been submitted to Mineral Development Department (MDD), Govt of Khyber Pakhtunkhwa and 23 maps are ready for submission while work on the remaining sheets is actively underway.








Hundreds of newly identified prospective zones were delineated for metallic minerals, rare earth elements, industrial rocks, and construction materials to guide future economic investments in Khyber Pakhtunkhwa. Modern ArcGIS Pro tools and remote sensing data were integrated with field observations to ensure high cartographic and scientific accuracy. This project provides essential baseline data for investors and the KP Mines and Minerals Department to foster sustainable resource extraction. Teams are actively working to finalize the remaining 46 map sheets to complete the regional coverage.

# INTERNATIONAL ENGAGEMENTS/VISITS

## GSP PARTICIPATES IN INTERNATIONAL INTENSIVE COURSE ON UNESCO GLOBAL GEOPARKS 2025 IN LESVOS, GREECE

The GSP participated in the International Intensive Course on UNESCO Global Geoparks 2025, held at the Lesvos Island UNESCO Global Geopark, Greece, from 20-29 June 2025, and organized jointly by UNESCO and the Global Geoparks Network (GGN). Recognized as the premier annual international capacity-building programme, the course brought together 90 participants from 34 countries for ten days of intensive learning, knowledge exchange, and field visits.

Representing Pakistan at this distinguished international forum, Mr. Adnan Alam Awan, then Deputy Director General, GSP, highlighted the country's significant geoheritage potential and the importance of conserving its diverse geological sites. He shared ongoing efforts and future aspirations for strengthening geoheritage documentation, geo-conservation practices, and international collaboration in this field. The engagement further explored opportunities for integrating geoconservation with sustainable development and geoscience advancement.





## GSP JOINS GLOBAL GEOLOGICAL LEADERS AT FUTURE MINERALS FORUM 2026, RIYADH, SAUDI ARABIA

The GSP participated in the 3rd International Geological Surveys Meeting held in Riyadh, Kingdom of Saudi Arabia, on 13 January 2026 as part of the prestigious Future Minerals Forum (FMF) 2026. Mr. Adnan Alam Awan, Director General of GSP was present among the distinguished delegates at this high-level gathering, which brought together 30 Heads of Geological Surveys from across the world. The meeting provided a unique platform for strategic dialogue on the future of geosciences, critical minerals, and sustainable resource development.

Held under the theme "Advancing Geological Frontiers: Innovation, Integration, and Impact," the meeting brought together global geological leaders to promote innovation, strengthen collaboration, and advance sustainable mineral development. GSP's participation highlighted Pakistan's commitment to international geoscience cooperation and engagement with leading geological institutions worldwide.



# INTERNATIONAL ENGAGEMENTS/VISITS

## GSP HIGHLIGHTS PAKISTAN'S MINERAL POTENTIAL AT EURO-ASIA ECONOMIC FORUM 2025

GSP actively participated in the Euro-Asia Economic Forum (EAEF) 2025 held in Xi'an, China, from 23-25 September 2025, providing a valuable platform to promote Pakistan's mineral resources and strengthen international cooperation in the mining sector.

Representing GSP, Muhammad Saeed, Chief Geophysicist, delivered presentations on the mineral potential of the Chagai Metallogenic Province (CMP), emphasizing investment opportunities and Pakistan's growing prospects for mineral exploration and development. The presentations highlighted the country's rich metallic mineral resources and ongoing exploration initiatives in Balochistan.

During a technical session on modern exploration techniques, GSP also showcased the discovery of a porphyry mineralization system associated with Aeromagnetic Anomaly No. 18 near Mashkichah, Nokkundi, District Chagai, demonstrating the successful application of advanced geophysical methods in mineral exploration.

The forum facilitated productive engagement with geoscientists, policymakers, investors, and mining professionals from SCO and Belt & Road partner countries.






It also opened avenues for future scientific collaboration, knowledge exchange, and international participation in geological research initiatives.

GSP's successful participation not only enhanced Pakistan's visibility in the global mining community but also reinforced its commitment to attracting foreign investment, advancing geoscientific research, and promoting the sustainable development of the country's mineral resources.

# NOTABLE EVENTS OF 2025-26

## GSP PARTICIPATED IN PMIF 2025




- GSP participated in Pakistan Minerals Investment Forum (PMIF 2025) at Jinnah Convention Centre, Islamabad.
- The Prime Minister inaugurated the event, attended by officials, top leadership, and global investors.
- GSP showcased its role as Pakistan's leading geoscientific body, offering credible data and expertise.
- GSP highlighted resources like copper, gold, lithium, rare earths, and coal, plus ongoing exploration.
- By sharing verified insights, GSP reinforced its commitment to sustainable, transparent mineral development.
- The participation boosted investors' confidence and positioned GSP as a key partner under the Special Investment Facilitation Council framework.

## DISTINGUISHED FOREIGN DELEGATES VISIT GARL, GSP DURING PMIF 2025



Delegation from the IGS visits GARL to discuss global geodesy and GNSS collaboration.



Türkiye delegation visit – Advancing cooperation in geological sciences and mapping.



Delegation from South Africa visits GARL to explore collaboration and knowledge exchange in geoscience research.

# NOTABLE EVENTS OF 2025-26

## INTERNATIONAL CONFERENCE ON GEOLOGICAL HAZARDS IN PAKISTAN

The Geological Survey of Pakistan (GSP) hosted the International Conference on Geological Hazards on 27-28 May 2025 in Islamabad. DG GSP, Dr. Sajjad Ahmad inaugurated the event, while DDG/Project Director (PSDP-geohazards) Mr. Adnan Alam Awan outlined Pakistan's geohazard status and future strategies. Chairman NDMA Lt. Gen. Inam Haider Malik attended as Chief Guest, alongside national and international experts, UNESCO Pakistan, and university faculty.






Participants during the International Conference on Geological Hazards held on 27–28 May 2025 at Islamabad

Keynote speakers Dr. Roger Bilham (USA) and Dr. François Jouanne (France) addressed seismic gaps and tectonic monitoring. Technical sessions were hosted by UNESCO Pakistan, Aga Khan Agency for Habitat, and PEC, with over 50 research presentations.

GSP unveiled the 2025 Tectonic Map and signed cooperation letters, with key stakeholders pledging joint efforts on earthquake and landslide hazard assessment – a key step in advancing Pakistan's geoscience research.




World known Seismologist, Prof. Dr. Roger Bilham (USA) Addressing the conference participants

# NOTABLE EVENTS OF 2025-26

## GSP HOSTS FIRST NATIONAL COMMITTEE MEETING FOR UNESCO'S INTERNATIONAL GEOSCIENCE AND GEOPARKS PROGRAMME (IGGP)




The Pakistan National Committee for UNESCO's International Geoscience and Geoparks Programme (IGGP) held its first meeting on 23 January 2025 at GARL, Islamabad.

Representatives from UNESCO, the Ministry of Energy, federating units, and geoscience experts discussed IGGP's status, challenges, and opportunities for Geopark development.

Dr. Sajjad Ahmad, DG GSP, emphasized UNESCO's role in global cooperation, while Deputy DG Mr. Adnan Alam Awan outlined key initiatives for implementation. The meeting concluded with a shared vision: to establish Pakistan's first Geopark, promote geotourism, and preserve the nation's geological heritage for sustainable growth.



Participants of the Pakistan National Committee for UNESCO's International Geoscience and Geoparks Programme (IGGP) on 23 January 2025 at GARL, Islamabad.

# MOMENTS THAT MATTER

## A GLIMPSE OF DISTINGUISHED DELEGATIONS VISITING GARL

The Geoscience Advance Research Laboratories (GARL) of the Geological Survey of Pakistan (GSP) in Islamabad recently hosted a series of high-profile national and international delegations, solidifying its position as a hub for advanced geoscientific research and mineral sector investment.



Surveyor General of Pakistan visits GARL (21 October 2025)



Delegation of International Resources Holding (IRH) experts (26 November 2025)



MTAIC Türkiye Delegation visit (28 November 2025)




German Delegation visit (03 December 2025)




Australian Delegation visit (09 December 2025)




Canadian Delegation visit (07 January 2026)

# MOMENTS THAT MATTER

## A GLIMPSE OF DISTINGUISHED DELEGATIONS VISITING GARL



Delegation of Japanese Embassy visit (20 February 2026)



Delegation from Saudi Geological Survey Visit GARL (07 April 2026)



China Geological Survey Experts visit (07 April 2026)



China-Pak Joint Research Programme (18 May 2026)



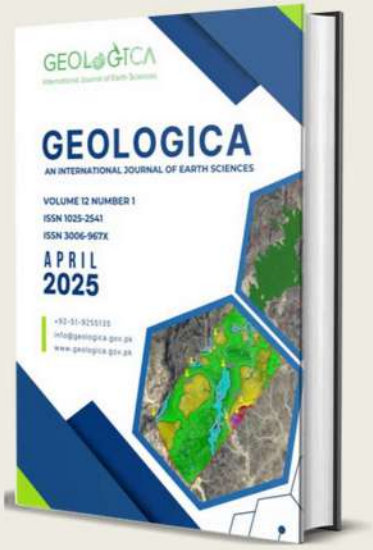
Australian Delegation visit (21 May 2026)



Delegation from Kazakhstan visit (21 May 2026)

# PUBLICATIONS & KNOWLEDGE PRODUCTS

## REVIVAL OF GEOLOGICA JOURNAL

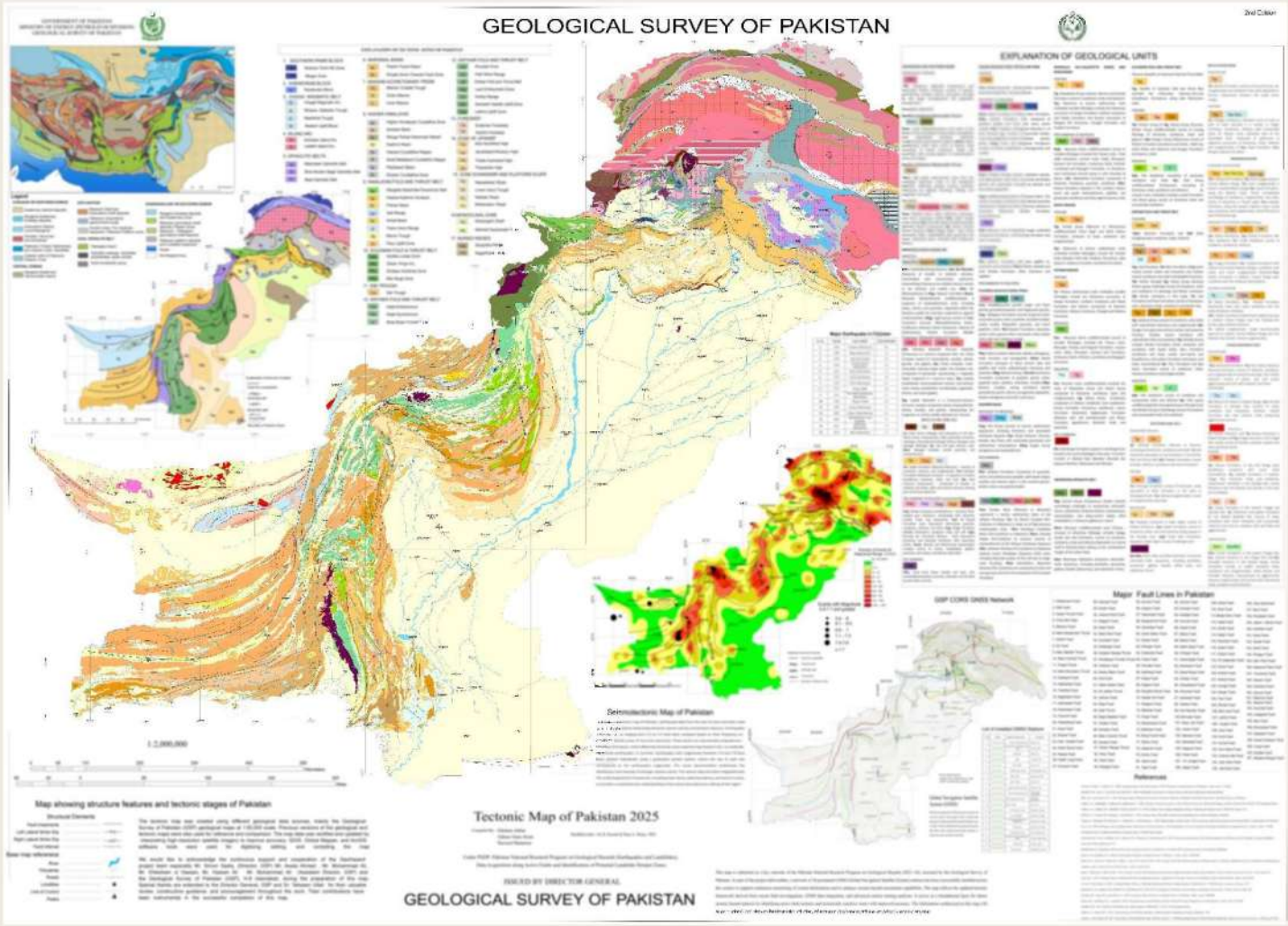



The GSP has successfully revived Geologica, its flagship research journal, after a two-decade. First launched in 1995 with JICA, the journal returned in 2024 with four new volumes, an international Editorial Board, open-access publication, and an ISSN—reaffirming GSP's commitment to scientific excellence and global geoscience collaboration.

## Call for Manuscripts!

We invite researchers to submit manuscripts for Volume 14, to be released in 2026-27.
Visit our website for more details: https://geologica.gov.pk

## Tectonic Map of Pakistan - 2025




GSP released the Tectonic Map of Pakistan – 2025 (after 1982 map version)

# TECHNICAL HIGHLIGHTS

## KOH-E-SULEMAN MINERAL RESOURCE ASSESSMENT PROJECT UNDERWAY

The GSP is implementing the project, "Economic Prospective of Coal, Iron Ore, Limestone and Other Industrial Minerals in Koh-e-Suleman, D.G Khan Division", under the Government of Punjab's Annual Development Programme (ADP) 2025-28. Executed through a Consultancy Agreement with the Mines & Minerals Department (MMD), Government of Punjab, the project's Phase-I focuses on reconnaissance, geological and topographic mapping, geochemical investigations, and the identification of prospective mineral blocks. Phase-II is contingent upon the outcomes of Phase-I.

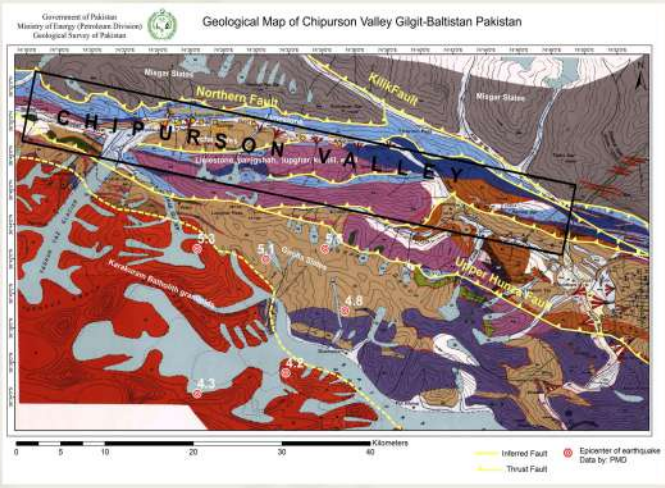


Signing of the Contract Agreement between the Mines & Minerals Department (MMD) and the Geological Survey of Pakistan (GSP).

GSP has successfully completed the first milestone with the submission of the Literature Review, Reconnaissance Survey and Inception Report. The second milestone, Topographic Survey and Mapping, is currently in progress, with the project advancing on schedule towards the economic evaluation of Punjab's mineral resources.

## FAULTS IN MOTION: UPPER HUNZA'S SEISMIC EPISODE

The Geological Survey of Pakistan (GSP) conducted a technical assessment of an earthquake swarm recorded in Upper Hunza, Gilgit-Baltistan, on 27 March 2026. The sequence comprised six earthquakes (Mw 4.2-5.5) occurring within a short period near Lupghar Pass and Chipurson Valley. GSP attributed the activity to ongoing tectonic movement along active faults in the Karakoram region, associated with the India-Eurasia collision zone.

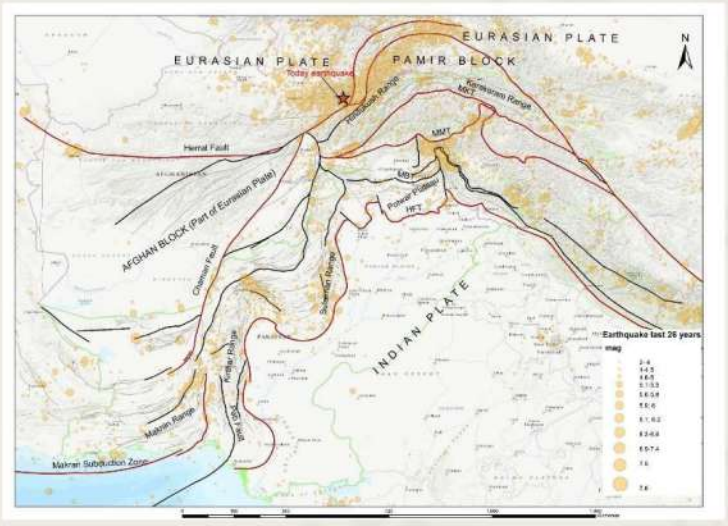



Due to the presence of unconsolidated sediments, glacial deposits, and nearby active faults, Chipurson Valley was identified as particularly susceptible to stronger ground shaking. GSP advised residents to remain vigilant, anticipate possible aftershocks, and avoid unstable slopes while continuing seismic monitoring through field investigations and GNSS-based crustal deformation studies.

# TECHNICAL HIGHLIGHTS

## DEEP BENEATH THE HINDU KUSH: A POWERFUL EARTHQUAKE FELT ACROSS PAKISTAN

The Geological Survey of Pakistan (GSP) issued a technical assessment following a significant intermediate-depth earthquake that struck the Hindu Kush region near the Afghanistan–Tajikistan border on 3 April 2026. Owing to its depth (approximately 170–190 km), the earthquake was felt across much of Pakistan, including Peshawar, Islamabad, Lahore, Khushab, and Multan, while posing a relatively low risk of localized damage.




| Time | Magnitude | Depth (Km) | Latitude | Longitude | Epicentre | Felt Report |
|---|---|---|---|---|---|---|
| 03-04-2026 21:13 | 5.8–6.1 | ~190 | 36.59°N | 70.52°E | Hindu Kush Region (Afghanistan–Tajikistan border, ~75 km from Garam Chashma) | Felt widely across northern and central Pakistan including Peshawar, Islamabad, Lahore, and Multan |

Table. The detail of seismic event on 03-04 2026 in Hindu Kush Region. Source: USGS

GSP confirmed that the event reflects the normal tectonic activity associated with the ongoing convergence of the Indian and Eurasian plates and is not linked to any active surface fault within Pakistan. The public was advised to remain calm, as such earthquakes are common in the Hindu Kush region, while GSP continues routine seismic monitoring.

## FIVE EARTHQUAKES HIGHLIGHT ACTIVE TECTONICS IN NORTHERN BALOCHISTAN

The Geological Survey of Pakistan (GSP) issued a public information update following a sequence of five moderate earthquakes (Mw 4.2–4.6) recorded in northern Balochistan between 26 and 27 June 2026. The seismic activity is associated with the active Kingri and Hernai fault systems, which accommodate ongoing tectonic deformation caused by the convergence of the Indian and Eurasian plates.

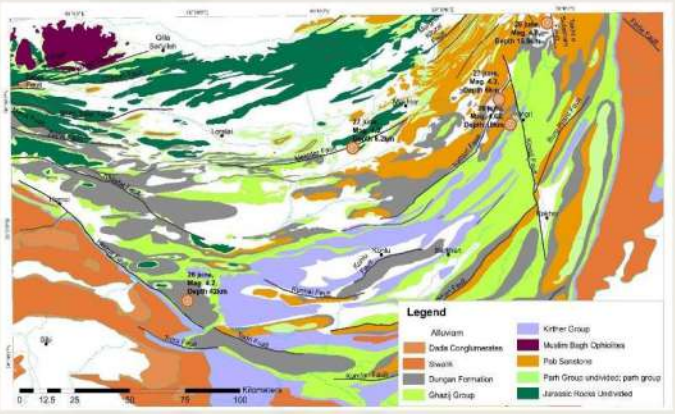



Table 1: The detail of seismic event occurs in Balochistan. Source: USGS

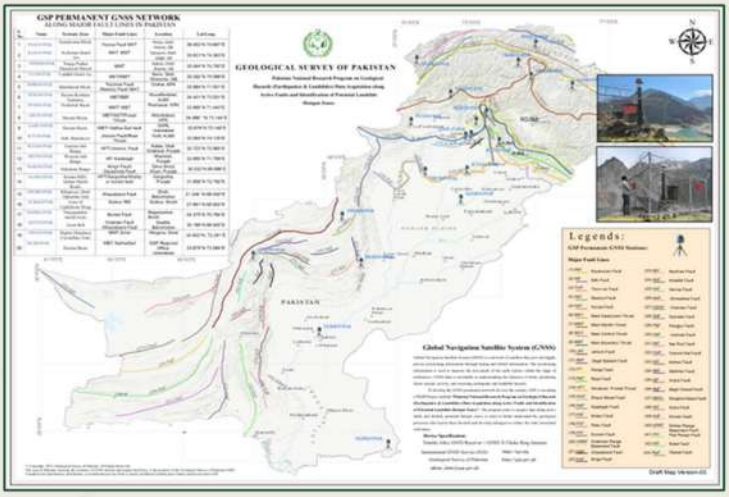
| Date* | Time (PKT) | Magnitude | Depth (km) | Latitude | Longitude | Epicentre |
|---|---|---|---|---|---|---|
| 26.06.2026 | 4:57:59 | 4.6 | 15.9 | 30.883°N | 69.894°E | Musa Khel Bazar |
| 26.06.2026 | 10:25:13 | 4.2 | 42 | 29.720°N | 68.460°E | 57 km NE of Sibi |
| 26.06.2026 | 10:57:53 | 4.62 | 10 | 30.412°N | 69.776°E | Kingri (Rarasham) |
| 27.06.2026 | 5:44:57 | 4.3 | 6.2 | 30.319°N | 69.133°E | Kahjuri |
| 27.06.2026 | 8:06:22 | 4.3 | 6.2 | 30.510°N | 69.730°E | Kingri |

While the recorded magnitudes are within the region's normal seismic range, the unusual clustering of events prompted GSP to recommend enhanced seismic monitoring, public awareness, and structural safety assessments in the affected areas. Citizens were also advised to exercise caution, particularly around older and structurally vulnerable buildings.

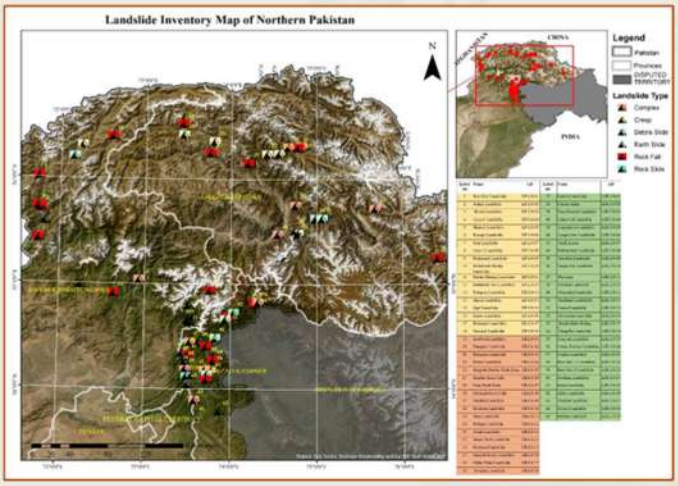
# TECHNICAL HIGHLIGHTS

## BUILDING A SAFER PAKISTAN: GSP ACCOMPLISHED LANDMARK GEOHAZARD PROJECT

The Geological Survey of Pakistan (GSP) has successfully completed the PSDP-funded project aimed at strengthening Pakistan's capacity for earthquake and landslide hazard assessment and disaster risk reduction. The project delivered several key national milestones, including the establishment of a 20-station National CORS GNSS Network along active fault zones for continuous crustal deformation monitoring, the preparation of a comprehensive National Landslide Inventory Map through field investigations, remote sensing and GIS-based analysis, and the enhancement of seismic hazard assessment capabilities across the country.




These outcomes will support hazard zonation, infrastructure planning, and evidence-based decision-making, while contributing to Pakistan's long-term Disaster Risk Reduction (DRR) strategy and sustainable development.






GSP GNSS (CORS NETWORK) KATAS, SALT RANGE
(Similarly, 20 GNSS station established across the country)



GSP GNSS OBSERVATORY, QUETTA

The project has significantly strengthened GSP's scientific and technical capacity to monitor active tectonic processes, assess earthquake and landslide hazards, and provide rapid post-disaster geological investigations and technical support.

# OUTREACH & CAPACITY BUILDING

## SKILL DEVELOPMENT PROGRAMME - 2025

The Geological Survey of Pakistan (GSP) advances the understanding of Pakistan's geological framework and resource potential through scientific investigation, geological mapping, and geoscientific research, supporting sustainable mineral development, water and energy security, and informed national planning





In September 2025, GSP organized a skill development programme for newly inducted officers, providing training in geology, geophysics, drilling, and resource management to build professional expertise and support national development.

Through continuous professional training, higher education programmes, international technical collaboration, knowledge exchange, and hands-on field and laboratory experience, GSP aims to enhance the technical expertise of its geoscientists and technical staff. Special emphasis is being placed on modern geological mapping, mineral exploration, geophysical and geochemical techniques, GIS and remote sensing, geoscientific data management, advanced analytical technologies, and critical mineral assessment. These initiatives are designed to promote professional excellence, encourage innovation, improve institutional efficiency, and equip GSP to effectively address Pakistan's emerging geoscientific and mineral sector challenges

# OUTREACH & CAPACITY BUILDING

## ITALIAN DELEGATION VISITS GSP MUSEUM IN QUETTA

GSP hosted a 12-member Italian tourist delegation to the Museum of Earth Sciences at its Headquarters in Quetta on 7 December 2025.



The visitors explored thematic galleries featuring meteorites, industrial minerals, decorative building stones, and fossil exhibits, with the paleontological collection drawing particular interest.

The visit highlighted GSP's commitment to promoting Pakistan's rich geological heritage and fostering international scientific and cultural engagement.

## Bridging Academia and Research

Students from Bahria University visited GARL for a "One-Day Workshop on GIS & Remote Sensing Techniques." They visited the laboratories and gained hands-on exposure to modern geoscience tools and technologies. The workshop introduced students to practical applications of GIS, remote sensing, and spatial data analysis in geoscientific investigations. Students also interacted with GARL experts and learned about ongoing research activities and emerging geospatial technologies.

Students from the National University of Sciences and Technology (NUST) visited GARL to gain first-hand exposure to advanced geoscience technologies and research activities. During the visit, they visited state-of-the-art laboratory facilities, interacted with experts in geology, geophysics, geochemistry, and remote sensing. The visit provided valuable insight into the practical applications of geoscience while fostering greater interest in research, innovation, and career opportunities within Pakistan's geoscience sector.





# LEADERSHIP TRANSITION AT GSP

## FAREWELL AND BEST WISHES TO DR. SAJJAD AHMAD

The Geological Survey of Pakistan (GSP) bid a heartfelt farewell to Dr. Sajjad Ahmad on his tenure ending on 10 August 2025 after a distinguished career of dedicated service and visionary leadership.

During his tenure as Director General, he strengthened the institution by promoting scientific excellence, research, and organizational development. His professionalism, integrity, and commitment to the geoscience community left a lasting legacy that continues to inspire future generations.



**DR. SAJJAD AHMAD**
Ex. Director General
Geological Survey of Pakistan

## WELCOMING THE NEW DIRECTOR GENERAL: MR. ADNAN ALAM AWAN



**ADNAN ALAM AWAN**
Director General
Geological Survey of Pakistan

Mr. Adnan Alam Awan assumed the charge as "Director General" of the Geological Survey of Pakistan on 30 September 2025. He is a seasoned geoscientist with extensive experience in geological mapping, geoscientific studies, mineral exploration, and international project management, he has contributed to advancing Pakistan's geoscientific knowledge and strengthening international scientific collaborations. His work includes significant contributions in geological mapping and geohazard assessment in Pakistan. As Director General, he is committed to modernizing geoscientific capabilities, promoting international partnerships, human resource development and advancing scientific cooperation to support sustainable mineral resource development and further unlocking Pakistan's mineral potential.

# CONDOLENCES & OBITUARIES

## In Memoriam: Prof. Dr. Sajjad Ahmad



The Geological Survey of Pakistan (GSP) expresses its profound sorrow at the passing of Prof. Dr. Sajjad Ahmad, former Director General, GSP, on 7 September 2026.

A distinguished geoscientist and academic, he made significant contributions to geological mapping, mineral exploration, and geoscientific research in Pakistan. Among his most notable achievements was the revival of GEOLOGICA, the scientific journal of GSP, in 2024 after nearly two decades.

GSP pays tribute to his dedicated service and lasting contributions to Pakistan's geoscience community. His legacy will continue to inspire future generations of geologists. May Allah Almighty grant him Jannat-ul-Firdous and bless the bereaved family with Sabr-e-Jameel. Ameen.

## Remembering Mr. Syed Ibrahim Shah Gillani



It is with profound sorrow and heavy hearts that the Geological Survey of Pakistan (GSP) family grieves the passing of Syed Ibrahim Shah Gillani, former Deputy Director General and a deeply distinguished geologist, who departed from us on 19 February 2025.

Author of several GSP Memoirs and Records, his landmark Memoir-12 (1977) remains a cornerstone in Pakistan's stratigraphy. His publications significantly advanced the understanding of Pakistan's geology and mineral resources. His later works, including Memoir-22 (2009) and studies on the Sulaiman-Kirthar Ranges, reflect his lifelong dedication to geological sciences. A mentor and pioneer, his legacy will continue to inspire generations. May his soul rest in peace.

## In Memory of Mr. Mirza Talib Hasan



With deep sorrow and heavy hearts, the Geological Survey of Pakistan mourns the passing of Mirza Talib Hasan, former Director General and a distinguished geoscientist, who passed away on 3 November 2025

A pioneer in coal exploration and energy geology, his contributions to coal and phosphate research played a vital role in Pakistan's resource development. Beyond his professional achievements, he was admired for his humility, wisdom, and mentorship, inspiring generations of geoscientists. The GSP family pays heartfelt tribute to his lifelong service and enduring legacy, and prays for his eternal peace. His contributions will remain forever etched in Pakistan's geological history.

# LOOKING AHEAD TO 2027

## 2027 Vision

**"Transforming Geoscience into Knowledge, Opportunity, and National Growth"**

GSP Vision Statement: Transforming GSP into a modern, technologically advanced and internationally recognized geoscientific institution, providing the scientific foundation for sustainable exploration and development of Pakistan's mineral resources.

With innovation, scientific excellence, and collaboration as our foundation, the Geological Survey of Pakistan (GSP) will continue unlocking the nation's geological potential, strengthening resilience, and supporting sustainable socio-economic development for generations to come.

Digital Geoscientific Transformation: Developing a modern, integrated national geoscientific database and an accessible GSP Web Portal for data-driven investment and decision-making.

Strategic Critical Mineral Exploration: Strengthen national exploration programs to identify, evaluate, and promote Pakistan's critical mineral and rare earth potential.

Advanced Technology and Analytical Excellence: Modernize geological investigation, mineral characterization, and analytical capabilities through advanced laboratories and innovative technologies.

Human Capital and Global Partnerships: Build a highly skilled geoscientific workforce through professional development, research, technology transfer, and international technical collaboration.

National and Provincial Coordination: Strengthen collaboration with federal and provincial governments, academia, and the private sector to facilitate responsible mineral development and attract investment.



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